

### Missing Items

The detailed comments that [ ] provided to [ ] expand on most of the missing elements that should be included in any decision paper for the President on a project of this magnitude. Highlights of such major analytical deficiencies include:

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- o A thorough analysis of what ~~is~~ currently in the NASA program to meet the goals and objectives of the Space Policy, and an analysis of deficiencies with respect to meeting the Space Policy objectives.
- o A thorough accounting for the ~~positive~~ effects of U.S. private sector efforts and the alternative benefits that might be gained from a more extensive effort on commercialization.
- 1 o A thorough evaluation of the benefits versus the costs, risks, and potential adverse effects of extensive interantional involvement in a space station.
- 2 o Detailed plans and cost estimates for each major element of a space station, as well as for any enhancements and applications that would be necessary to achieve the benefits claimed.
- 3 o T totality of evidence, including the views of NASA advisory committees and disinterested parties (not studies by NASA aerospace contractors who are essentially captive or likely beneficiaries) that indicate clearly that a manned space station is the most effective means of accomplishing national objectives, especially if users are required to pay an unsubsidized share of all costs.
- 4 o The evidence that the concerns of the national security sector would be fully satisfied and that there would not be any adverse impacts on the President's high priority national security programs.
- o The specific evidence (sector by sector and capabiltiy by capability) that allied nations plan to make comparable investments and commitments and are challenging U.S. leadership, not just begining to share in technologies and markets that we have created.
- 5 o The evidence that the Soviet comitments are a challenge to U.S. civil leadership and will offer specific capabilites that are clearly needed but not available to the U.S.
- 6 o The evidence that the world perception is that our leadership is in fact being challenged by current Soviet activities.

- 7 ° The evidence that the Space program could be undertaken with high confidence within realistic overall annual budget levels for NASA , and without compromising essential program balance, when the totality of what is anticipated to achieve the full benefits envisioned from a space station are recognized.

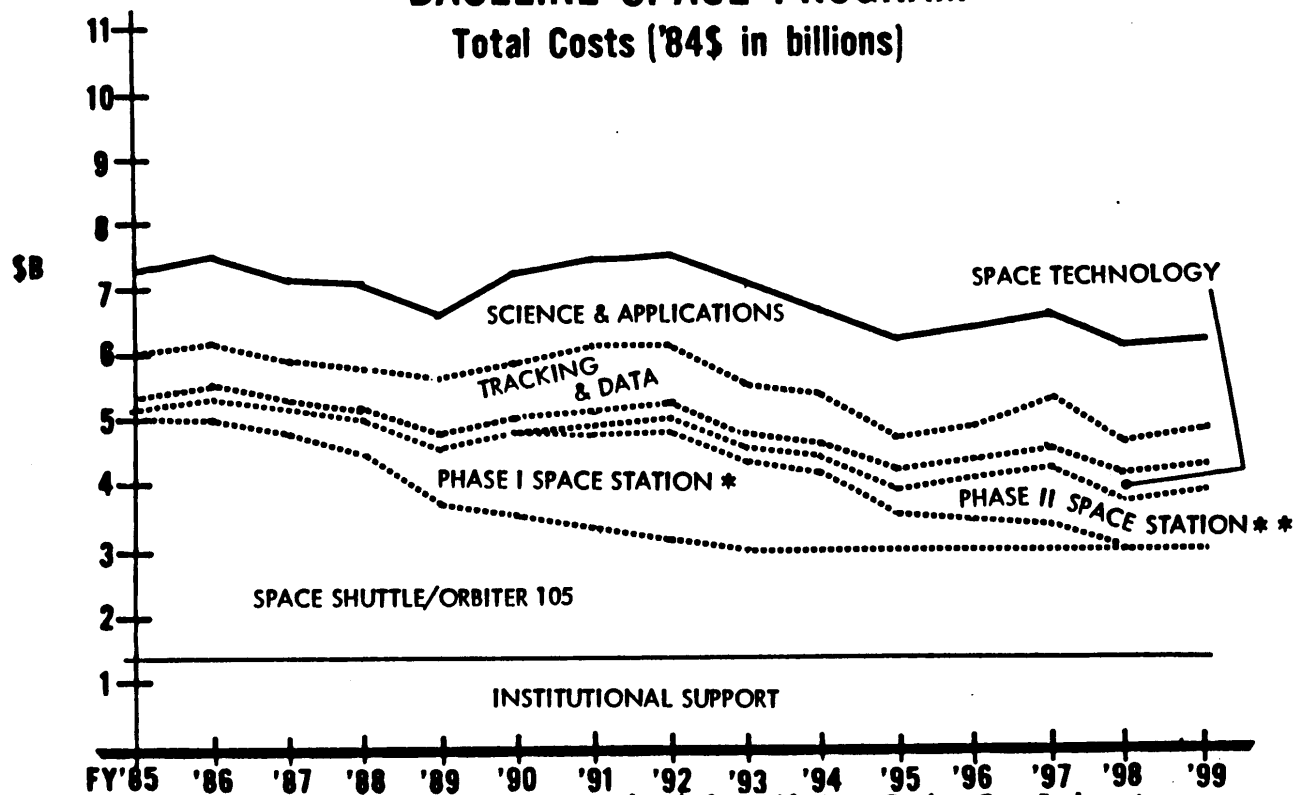
**B-1. A thorough evaluation of the benefits versus the costs, risks, and potential adverse effects of extensive international involvement in a space station.**

**The SIG (Space) Space Station Working Group issue paper entitled, "What Are the Foreign Policy Implications of Manned Space Station?" provides the best available answer to this question. This paper, drafted by the Department of State, was submitted to the National Security Council on July 1, 1983.**

**B-2. Detailed plans and cost estimates for each major element of a space station, as well as for any enhancements and applications that would be necessary to achieve the benefits claimed.**

**The enclosed charts, which were provided before, are still applicable.**

## NASA BASELINE SPACE PROGRAM Total Costs ('84\$ in billions)



\*Includes Teleoperator Maneuvering System, Polar Platform, Aft Cargo Carrier, Crew Equipment, Technology & Advanced Development.

\*\*Includes Orbital Transfer Vehicle, Platform, Manned Orbital Transfer Vehicle Capsule, Technology & Advanced Development.

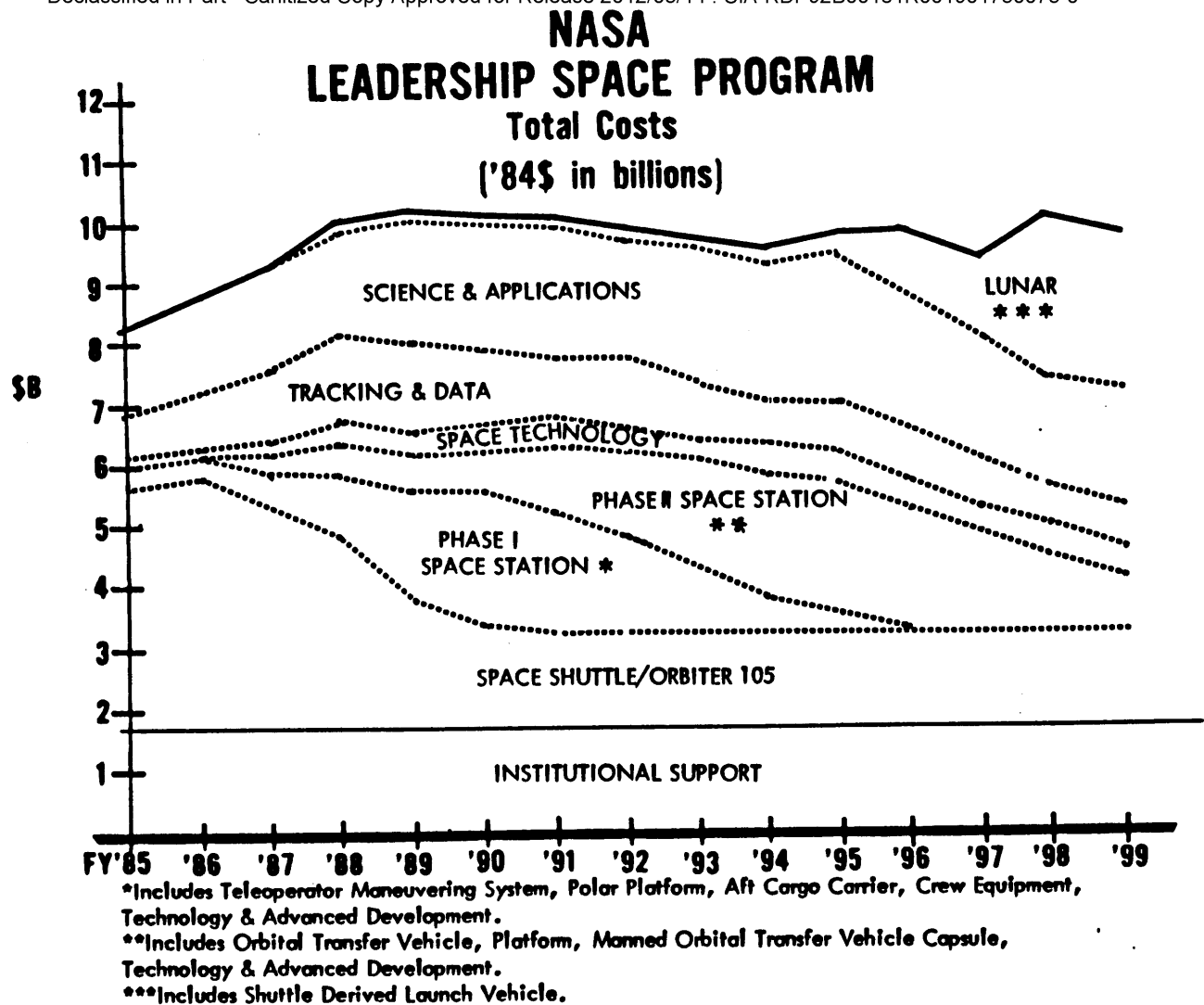
(FY 1984 \$ IN BILLIONS)

NASA  
BASELINE SPACE PROGRAM SUMMARY

5-31-83

	FISCAL YEARS															15 YEAR TOTAL
	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	
Science and Applications	1.3	1.2	1.1	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	18.4
Tracking and Data	.7	.7	.7	.7	.8	.9	1.0	.9	.8	.8	.7	.7	.7	.7	.7	11.5
Space Technology	.1	.1	.1	.1	.1	.2	.1	.2	.2	.2	.1	.2	.2	.2	.2	2.1
Phase II Space Station							*	.2	.2	.4	.4	.7	1.0	.8	.9	4.6
Phase I Space Station	.2	.3	.4	.6	.8	1.4	1.7	1.7	1.5	1.0	.6	.4	.3			10.9
Shuttle/OV-105	3.6	3.6	3.3	3.0	2.4	2.1	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	32.7
Institutional Support	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	21.0
BASELINE TOTAL	7.3	7.3	7.0	7.0	6.7	7.1	7.3	7.4	7.0	6.0	6.1	6.3	6.5	6.0	6.1	101.6

Numbers may not add due to rounding  
 \* = Less than \$.05 Billion



(FY 1984 \$ IN BILLIONS)

NASA  
LEADERSHIP SPACE PROGRAM SUMMARY

5-31-83

	FISCAL YEARS															15 YEAR TOTAL
	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	
Lunar	*	*	*	.1	.1	.2	.1	.2	.2	.2	.3	1.1	1.5	2.7	2.7	9.4
Science and Applications	1.5	1.6	1.7	1.9	2.1	2.2	2.2	2.1	2.2	2.2	2.6	2.2	2.0	1.8	2.0	30.2
Tracking and Data	.7	.7	1.1	1.4	1.4	1.3	1.0	.9	.9	.7	.8	.8	.8	.7	.7	13.8
Space Technology	.1	.2	.3	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	5.9
Phase II Space Station		.1	.3	.3	.6	.6	1.2	1.5	1.9	2.0	2.2	1.9	1.5	1.2	.7	15.9
Phase I Space Station	.5	.5	.7	1.4	1.7	2.0	1.9	1.5	.9	.6	.3	.1				12.1
Shuttle/OV-105	3.9	4.0	3.5	2.9	2.1	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	32.6
Institutional Support	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	25.1
LEADERSHIP TOTAL	8.4	8.8	9.3	10.1	10.2	10.2	10.1	9.8	9.7	9.4	9.9	9.8	9.5	10.0	9.8	145.0

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B-3. The totality of evidence, including the views of NASA advisory committees and disinterested parties (not studies by NASA aerospace contractors who are essentially captive or likely beneficiaries) that indicate that a manned space station is the most effective means of accomplishing national objectives, especially if users are required to pay an unsubsidized share of all costs.

The National Academy of Sciences Space Science Board endorses service and maintenance of free flyers by a manned Space Station. These include Space Telescope, Gamma Ray Observatory, X-ray Timing Explorer, Far Ultraviolet Spectroscopy Explorer, Corona Diagnostic Mission, Solar Maximum Mission, Advanced X-ray Astrophysics Facility and Large Deployable Reflector. Tom Donahue, Chairman of the Space Science Board, stated in a paper at NASA's AIAA Space Station Symposium that space station capabilities for assembly and construction are required for important future missions.

The Materials Processing in Space Research and Development Laboratory is supported by some 85 industrial firms who are potential users of these facilities. In addition, some \$300 million in venture capital has been committed to exploring the feasibility of private industry supplying this laboratory.

Technology development is a national issue and NASA is a leader in the field. Thus, the technology development missions established for the space station are required both for future NASA and DOD mission implementation and for maintaining United States leadership in space technology.

Numerous workshops and seminars organized by science and applications professionals over the past decade have produced summary conclusions and reports that support the value of a Space Station and/or space platform. Reports include:

(1) Astronomy and Astrophysics for the 1980's, Volume I: Report of the Astronomy Survey Committee, National Academy Press, Washington, DC, 1982.

This report of the Astronomy Survey Committee of the National Research Council includes the conclusion that the space platform concept offers considerable promise in carrying out space science objectives with greater flexibility and at lower cost.

(2) UAH/NASA Workshop on Space Science Platform, edited by S. T. Wu, the University of Alabama in Huntsville and Samuel Morgan, NASA/Marshall Space Flight Center, August 1978.

At this workshop, the panels, composed of scientists from universities and government, defined the user requirements for a Space Science Platform in the areas of high energy astrophysics, astronomy, lunar and planetary science, solar physics, atmospheric science and life sciences.

(3) NASA Workshop on Solar Terrestrial Studies from a Manned Space Station, NASA Conference Paper 2024, Marshall Space Flight Center, February 1977.

This workshop, conducted at Utah State University, recommended the value of the manned Space Station for coordinated instrument ensembles having a scale and complexity not accommodated practically on automated spacecraft.

(4) Gunterville Workshop on Solar Terrestrial Studies, NASA Conference, Publication CP-2037, Marshall Space Flight Center, October 1977.

This workshop recommended joint observational programs for solar, magnetospheric, atmospheric, and sun-weather science.

(5) Skylab's Astronomy and Space Sciences, NASA Special Publication 404, edited by Charles A. Lundquist, Marshall Space Flight Center, 1979.

This book contains a survey of the value of the experiments and scientific results from the Skylab.

(6) Advanced X-Ray Astrophysics Facility (AXAF) Phase A Reference Concept by Smithsonian Astrophysical Observatory, November 1980.

This report includes a discussion of the plans for, and value of, on-orbit servicing of the AXAF.

(7) Solar Terrestrial Observatory - Final Report of the Science Study Group, Center for Astrophysics and Space Sciences, University of California, San Diego, California, Contract No. NASA 8-33795, October 1981.

This is a summary of the scientific objectives and instrumentation for a Solar Terrestrial Observatory, based on a space platform.

The most recent report evaluating the Space Station value is the Space Applications Board report which is presently under review. To obtain information about the recent findings of this group, contact the chairman:

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Cleveland, OH 44117

B-4. The evidence that the concerns of the national security sector would be fully satisfied and that there would not be any adverse impacts on the President's high priority national security programs.


NASA believes that the manned Space Station would be an additional asset that would serve both the national security and civil space endeavors. It is NASA's belief that ultimately the existence of a Space Station would enable civil and national security endeavors to be performed in a more economical manner by virtue of the ability of the Space Station to maintain and improve space assets. NASA agrees that the views of DOD and the intelligence community expressed in the summary report of the Senior Interagency Group Space Station Working Group that commitment to a manned Space Station program should not adversely affect current and projected DOD and intelligence community space programs and overall priorities.

B-5. The evidence that the Soviet commitments are a challenge to United States civil leadership and will offer specific capabilities that are clearly needed but not available to the United States.

The Soviet commitment is well documented in the special intelligence briefing given the President on July 22, 1983, and in the recent national intelligence estimate conducted by the intelligence community. This commitment, in particular Salyut and its successors, presaging the permanent human occupancy of space, challenges United States civil leadership by providing to the Russians in the 1980's an extensive human presence in space and, in the 1990's, a true permanent presence in orbit around the earth. Unlike the United States which, without a space station, will have men visit space, Soviet cosmonauts will be there all the time. This permanence will enable the Soviets to manufacture new, unique materials in quantity. It will support a rigorous and thorough capability for maintenance and repair of assets from the station, and a more efficient program of science and applications. It will also support the development of advanced geosynchronous communications satellites through the assembly and checkout of large payloads at their space station. These projected Soviet capabilities will not be matched by the United States based upon our current program projections.

**SECRET**

B-6. The evidence that the world perception is that our leadership is in fact being challenged by current Soviet activities.

 The Soviet's Salyut space station program supports important and sophisticated civil research in the fields of astronomy, biology and materials processing. While activity of a military nature is also conducted onboard Salyut, the program has a strong civil tone. This tone is magnified by Soviet propaganda which emphasizes the station's civil activities and hides the Soviet military activity aboard Salyut. Salyut 6 and 7 -- and their successors -- appear to be the first step towards the permanent human occupancy of space. Moreover, they are represented, and are viewed by many, as a symbol of Soviet technology and skill. Hence, the program, particularly in the years ahead, represents a direct challenge to the perception of leadership in America's civil space program. Furthermore, as the intelligence community points out, a visible, highly publicized, continuously manned Soviet space program will receive frequent world-wide attention and will enhance Soviet prestige.

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**B-7. The evidence that the space program could be undertaken with high confidence within realistic overall annual budget levels for NASA, and without compromising essential program balance, when the totality of what is anticipated to achieve the full benefits envisioned from a space station are recognized.**

**As per the enclosed charts from NASA's May 31, 1983, Space Station submission to the National Security Council, a balanced space program is maintained throughout NASA.**

(FY 1984 \$ IN BILLIONS)

NASA  
LEADERSHIP SPACE PROGRAM SUMMARY

5-31-83

	FISCAL YEARS															15 YR
	<u>85</u>	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>90</u>	<u>91</u>	<u>92</u>	<u>93</u>	<u>94</u>	<u>95</u>	<u>96</u>	<u>97</u>	<u>98</u>	<u>99</u>	<u>TOTAL</u>
Lunar	*	*	*	.1	.1	.2	.1	.2	.2	.2	.3	1.1	1.5	2.7	2.7	9.4
Science and Applications	1.5	1.6	1.7	1.9	2.1	2.2	2.2	2.1	2.2	2.2	2.6	2.2	2.0	1.8	2.0	30.2
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Phase I Space Station	.5	.5	.7	1.4	1.7	2.0	1.9	1.5	.9	.6	.3	.1				12.1
Shuttle/OV-105	3.9	4.0	3.5	2.9	2.1	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	32.6
Institutional Support	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	25.1
LEADERSHIP TOTAL	<u>8.4</u>	<u>8.8</u>	<u>9.3</u>	<u>10.1</u>	<u>10.2</u>	<u>10.2</u>	<u>10.1</u>	<u>9.8</u>	<u>9.7</u>	<u>9.4</u>	<u>9.9</u>	<u>9.8</u>	<u>9.5</u>	<u>10.0</u>	<u>9.8</u>	<u>145.0</u>

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